Psychometric Properties of the PSQ-OP and PSQ-ORG in Puerto Rico

Propiedades psicométricas PSQ-OP y PSQ-ORG en Puerto Rico

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Resumen

Antecedentes: Existen varios factores relacionados con el estrés en los agentes de policía. La organización juega un gran papel en como los agentes de policía experimenta una sobrecarga de trabajo y existe una estrecha relación entre el estrés operativo, en los asuntos personales y laborales. **Objetivos**: Este trabajo tiene como objetivo presentar las propiedades psicométricas los cuestionarios PSQ-OP y PSQ-ORG versión adaptada al español. **Método**: Estudio cuantitativo de diseño tipo transversal e instrumental en una muestra de 200 policías municipales de Puerto Rico y a través un análisis factorial y verificar la estructura factorial de los cuestionarios y los indicadores de confiabilidad y validez. **Resultados**: El análisis factorial confirmatorio con ecuaciones estructurales mostró indicadores adecuados de validez y confiabilidad tanto en el cuestionario PSQ-OP como en el PSQ-ORG versión adaptada al español con una estructura de un solo factor similar al cuestionario original versión inglés. **Conclusión**: Este estudio proporciona un instrumento a los profesionales estudien el estrés operacional y organizacional en los policías y les permite aportar nuevos estudios y literatura en Puerto Rico.

Palabras claves: análisis factor confirmatorio; estrés operacional; estrés organizacional; policías; psicometría

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Abstract

Background: There are several factors related to stress in police officers. The organization plays a role in impacting police officers who experience a heavy workload, and there is a close relationship between operational stress and personal and work-related outcomes. **Objectives:** This work aims to present the psychometric properties of the PSQ-OP and the PSQ-ORG questionnaire Spanish adapted version. **Method:** A quantitative study cross-sectional and instrumental type design in a sample of 200 municipal police officers in Puerto Rico and analysis carried out to verify the factorial structure of the questionnaires and the reliability and validity indicators. **Results:** The Confirmatory Factor Analysis with Structural Equation Modeling showed adequate validity and reliability indicators in both PSQ-OP and the PSQ-ORG questionnaire Spanish adapted version with one-factor structure as in the original English version questionnaire. **Conclusion:** This study provides an instrument for professionals to study the operational and organizational stress in police officers and allows them to contribute new studies and literature in Puerto Rico.

Keywords: confirmatory factor analysis; operational stress; organizational stress; police officers; psychometric

Introduction

Maran et al. (2015) point out that research on occupational stress shows police officers are subject to acute and chronic stress at work, harming their psychological and physical health and well-being. Koch et al. (2017) argue that a stress-induced work-related occupation like in the police force, especially when police officers lack control over automatic defensive responses, can be problematic due to their high-risk professions. Also, maintaining control over automatic responses is critical for optimal performance in life-threatening situations.

Additionally, stress is the demanding resource on the individual's psychological and physical functioning that threatens adaptation to a given situation. Therefore, stress is considered an illness that may impact people (Wani, 2014). Also, Sagar et al. (2014) say, on how police officers perform their job and duties, that stress in organizations is related to their work culture and policies. For example, a reduction in readiness and physical and mental effort capacity is characteristic of fatigue. According to Basinska et al. (2014), another characteristic of stress that police officers experience is acute fatigue, which is part of the everyday job, and it happens even in employees that serve jobs that require protecting people.

On the one hand, Bergström et al. (2017) argue that employees may experience common mental disorders. Other factors such as high job demands and low levels of control can increase mental health problems. In addition, other work-related factors may worsen and heighten the possibility of other common mental disorders. For instance, when employees lack social and emotional support from their superiors, they may experience a sense of job insecurity, and when there is no recognition for their hard work it can significantly impact their future work performance. On the other hand, employees who do not experience any common mental disorders believe they have

received fair treatment and recognition for their work performance.

Furthermore, Talavera-Velasco et al. (2018) claim that police work is hazardous and many police officers will eventually experience occupational stress. For example, police officers have to assist and handle citizens' complaints daily and carry out monotonous tasks such as filing police reports, assisting court citations, and testifying as an eyewitness in court, and they are constantly stressed out and overworked. Also, there are several other factors related to stress in police officers, which derive from the organization itself as, in some cases, the organizations may assign police officers heavy workloads and numerous cases. In addition, McCutcheon (2018) says that police officers experience operational stress and other stressors and events. It can consist of rape investigations, assaults, child abuse, child pornography, shootings, and even experiencing the death of a former colleague. On the other hand, on the physical and psychological level, Wirth et al. (2017) argue that police officers suffer from various health issues, including depression, psychological stress, sleep disruption, other metabolic disorders, cancer, and increased mortality.

Likewise, there are several causes of absenteeism in the police force other than occupational stress. There is also a disruption in their intimate relationships and social life activities and, in addition, the work culture in the organization may not provide them with the necessary tools, training, and early interventions to manage and process traumatic incidents. According to the literature review, some of the leading stress factors in the police force are dealing with the bureaucratic system or dangerous,

life-threatening circumstances such as facing dangerous criminals. Besides managing other administrative procedures can be very strenuous solving cases and, every so often, they have to cope with shifting working hours and last-minute rescheduling and, as a result, extra work. One of the most significant impacts on the police force is burnout. Pastwa-Wojciechowska and Piotrowski (2016) agree that there are other causes of stress in the police force, especially when there is no technical equipment available or the equipment is obsolete, or the police officers undergo prolonged court trials and every so often the judge may rule out an unfair court sentence. In addition, many police officers believe they are receiving a low pay salary which does not compensate for the extra workload they have to endure. Violanti et al. (2015) point out that absenteeism may cause supervisors to reassign duties to other police officers, causing fewer of them to be on patrol and providing less service and protection to the general public.

Conversely, McCutcheon (2018) points out that organizational stress differs from operational stress. It consists of constant work pressure on the police officers, and occasionally they do not have time off nor have a rapport with their superiors or peers to communicate and verbalize just to release some tension. However, organizational stresses are predominant and constant compared to operational stresses, and it is a probable cause promoting adverse psychological well-being in police officers. Likewise, organizational stress may consist of around-the-clock shift work, an overload of work and paperwork, unfair promotions, poor communication with peers and supervisors, and no trusting relationships

between police officers and their superiors and the institution.

Additionally, specific individuals are predisposed to and undergo more significant stress than others. For instance, there is an association between work-related stress and neuroticism and self-efficacy beliefs (Lucas et al., 2012). Moreover, Ragesh et al. (2017) point out that occupational stress is associated with several factors related to the organization's errors and the lack of correcting the mistakes and taking precautionary steps to avoid further incidents within the force. Studies show that higher stress levels can lower job satisfaction in the police force; low job satisfaction has predicted low levels of commitment and resignation.

According to Rasdi et al. (2018), one of the theories that may explain the effects of stress in the police force is the Job Demands-Resources Model by Demerouti et al. in 2001, in which when there is a lack of job control and social-emotional support in the working environment, these are the leading factors to mental health issues in employees. This theory is used today in a lot of police force research. Likewise, Archibald and Akers (2018) point out another possible theory is the General Strain Theory by Agnew in 1992, that police officers may experience higher stress levels and engage in deviant behaviors, such as verbal and physical assaults toward citizens, use excessive force when arresting citizens, and commit acts of nonfeasance behavior.

On the other hand, another factor in police stress is burnout, and it is a prolonged reaction to chronic emotional and interpersonal workplace stressors, especially chronic stress. Burnout focuses on exhaustion

and disengagement from work. It refers to when the individual experiences a loss of physical demands and interest to complete their job, when they may lack motivation, may encounter poor sociocognitive performance and a loss of energy due to prolonged high job demands. As a result, the individual may be emotionally distanced from work, which may negatively affect his or her work performance (Juczyński & Ogińska-Bulik, 2021). Similarly, Queirós et al. (2020) state that burnout is a three-dimensional syndrome that affects employees whose work and duties primarily focus on assisting and providing care or services to others.

Bergström et al. (2017) say that early interventions can prevent and lower work-related mental health problems in the organization. Early interventions on work-related mental health targeting and enhancing workability among employees may also help prevent sickness and absenteeism and other mild mental problems or occupational stress. Lucas et al. (2012) point out that work-based interventions can be ergonomic, such as restructuring the organization, restructuring job positions, and amending technical changes and physical demands on the work tasks.

On the other hand, this study aims to examine the psychometric properties of the 20-item Operational Police Stress Questionnaire (PSQ-OP) and the 20-item Organizational Stress Questionnaire (PSQ-ORG) by McCreary and Thompson (2006). These are instruments that seem to be consistent in measuring stressors in the police force throughout the years, therefore, the two instruments may help understand a general idea of job stressors in police officers. Furthermore, the popularity of the

20-item PSQ-OP and the 20-item PSQ-ORG has made essential contributions to the literature review and is still used today in research. Thus, this study pretends to answer the following questions: Will the Spanish adapted version of the 20-item PSQ-OP and the 20-item PSQ-ORG reproduce the exact structure of the original scale with optimal reliability and validity values? How were operational and organizational stress obtained in this study with the participants in Puerto Rico?

Furthermore, this study examines the psychometric properties of the Puerto Rican 20-item PSQ-OP and the Puerto Rican 20-item PSQ-ORG Spanish adapted version in the police workforce in Puerto Rico. Also, to validate and test the construct validity and reliability of the Puerto Rican 20-item PSQ-OP and the 20-item PSQ-ORG Spanish adapted version questionnaire with confirmatory factor analysis and structural equation modeling. In addition, examine other psychometric properties using the Cronbach's alpha formula, the McDonald's Omega, the Average Variance Extracted (AVE), the Composite Reliability (CR), and the convergent analysis of the Puerto Rican 20-item PSQ-OP Spanish adapted version questionnaire.

Research on PSQ-OP and PSQ-ORG

Maran et al. (2015) conducted a study in Italy. The study's objective is to examine the stressors perceived by police officers and the effects of gender, organizational role, and sector of operation on the perception of stress. The authors used one of the measurement methods, the 20-item Operational Police Stress Questionnaire by McCreary and Thompson (2006) on a sample consisting of 617 police officers. The authors concluded that the study differed between genders, sectors, and roles. The overall population generally shows the proper use of positive coping strategies. However, female police officers in operational service roles were more vulnerable to organizational and operational stressors than male police officers ($p < 0.05$).

Another study by Irniza et al. (2014) validated that the Malaysian 20-item PSQ-OP has a one-factor structure. However, the authors performed a Principal Component Analysis (PCA) statistical analysis, and the questionnaire possesses a Cronbach's alpha of .93. Also, the authors performed an external convergent analysis in the Malaysian 20-item PSQ-OP with the Malaysian 20-item PSQ-ORG, which shows a correlation of ($r = .80$).

A Brief Review of the 20-Item PSQ-OP and 20-Item PSQ-ORG

The 20-item PSQ-OP and the 20-item PSQ-ORG are instruments that measure stressors in the police force associated with fatigue, physical health, stress, psychological well-being and other health problems resulting from police work tasks and duties. The two instruments were adapted and translated into over 14 languages. The 20-item PSQ-OP and the 20-item PSQ-ORG were developed in 2006 by McCreary and Thompson. The two instruments measure policing-specific stressors and ask police officers about stressful characteristics of their work, the impact of job-related stress on their families, the effects of stress at home, on their ability to do their job, and their effects on their health (McCreary et al., 2017).

First, the 20-item PSQ-OP and the 20-item PSQ-ORG underwent a three-phase development and construction in Ontario, Canada. Then a focus group of 55 police officers identified stressors associated with policing. Afterward, the authors categorized two general categories of stressors, Operational Stress and Organizational Stress. Later, the authors decided to use two separate police stress questionnaires: The Operational Police Stress Questionnaire and the Organizational Police Stress Questionnaire (McCreary & Thompson, 2006).

Next, the 20-item PSQ-Op and the 20-item PSQ-Org were tested with a sample of 47 police officers, who answered the questionnaire and helped decide which items were comprehensible. Each police officer rated the items for both stress and frequency. Phase one, a pilot-testing, served as an initial assessment of the 20-item PSQ-Op's and 20-item PSQ-Org's reliability and then the items were modified. The psychometric analyses indicated that the 20-item PSQ-OP and 20-item PSQ-Org had excellent Cronbach's alpha of .90 and has one dimension structure and corrected item-total correlations between .30 and .60. Finally, stress ratings for the 20-item PSQ-Op and 20-item PSQ-Org correlated with their respective frequency ratings of $r = .70$ (McCreary & Thompson, 2006).

The second phase was to conduct reliability and validity analysis. First, 197 police officers answered the 20-item PSQ-OP, the 20-item PSQ-ORG and the Perceived Stress Scale, a short version of the Daily Hassles scale, which measure negative life events. The results show that the 20-item PSQ-OP and 20-item PSQ-ORG had a Cronbach's alphas of .90 and positively correlated ($r = .50$ or less) with the other general stress measures. In the second part, 188 police officers answered the 20-item PSQ-Op, the 20-item PSQ-Org, the Job Satisfaction Survey, and the Job-related Affective Well-being Scale (JAWS). The results showed that the 20-item PSQ-OP and the 20-item PSQ-ORG had a Cronbach's alpha over .90. The 20-item PSQ-OP and 20-item PSQ-Org scores negatively correlated with self-ratings from the JSS (-.19 to -.56) and the positive work-related emotions subscale from the JAWS (-.20 to -.25). Correlated scores from the negative work-related emotions subscale from the JAWS .27 to .34 (McCreary & Thompson, 2006).

Methodology

This study followed a quantitative cross-sectional and, upon availability, an instrumental type research design since it is a psychometric properties analysis. In the instrumental research design, measuring the instruments' psychometric properties analyzes and describes a population's behaviors, beliefs, and attitudes (Hernández-Sampieri et al., 2014; Montero & Leon, 2007).

Participants
A non-probability and convenience sampling is the sampling technique used to reach the municipal police officers. The inclusion criteria for the sample are as follows: the participants must work as active police officers in the municipality in the south region of Puerto Rico. The participants must be of both sexes and legally 21 years or older to participate. The exclusion

criteria are retired police officers, those under 21 years old and those unemployed or expelled from work as police officers. The sociodemographic variables shows that 75.5% (*n* = 151) were males and 40% (*n* =80) ranged the ages between 41 and 50 (Mean = 2.92; Standard deviation = 0.87). The police officers indicated that 53.5% (n = 107) are married, and 75.5% (*n* = 151) had more than one child. A 25.5 % (*n* = 51) indicated they worked more than 26 years or more as a municipal police officer and 26.5% (*n* = 53) had some college credits and 49.5% (*n* = 99) with an average monthly income of $1,500 -$2,000.

Instruments

A sociodemographic questionnaire contains the following variables: sex, age, civil status, number of children, number of years working as a police officer, education credentials, sector, and income. The second instrument is the Puerto Rican 20-item PSQ-OP Spanish adapted version. The third instrument is the 20-item PSQ-ORG Spanish adapted version, a translated version of the McCreary and Thompson's (2006) 20-item PSQ-OP, and the 20-item Organizational Stress Questionnaire. According to the literature review, the 20-item PSQ-OP and the PSQ-Org have a Cronbach's alpha over .90. The questionnaires are a seven point-Likert-type rating system (1 = *no stress at all*, 2 = *filler*, 3 = *filler*, 4 = *moderate stress*, 5 = *filler*, 6 = *filler* and 7 = *a lot of stress*). See Appendix A and Appendix B of the Puerto Rican 20-item PSQ-OP Spanish adapted version and the 20-item PSQ-ORG.

Procedure

The Pontifical Catholic University of Puerto Rico and the Institutional Review Board

(IRB) approved the study. The protocol is CEG -18-2019. The researcher did not require permission from the authors of the 20-item PSQ-OP and the 20-item PSQ-ORG questionnaires English version since it is of the public domain for academic purposes. The 20-item PSQ-OP and the 20-item PSQ-ORG English version undergoes a translation process by two bilingual language experts in Puerto Rico—subject matter experts—with a degree in English, a consultant with a doctoral degree in industrial-organizational psychology in Puerto Rico to verify the language content and semantic to translate back to the original language targeted in English. Then consent documents and the two questionnaires in paper form were given to the police officers. The participants received the consent documents and the questionnaires separately to guarantee privacy. Likewise, the researcher explained the study's objectives and confidentiality to the participants. Finally, this study was approved by the committee of the university accordingly to APA standards and code of ethics.

Statistical Analysis

In this study, the Statistical Package for Social Sciences (SPSS) version 24 was used to perform the descriptive statistics analysis, normality test, Cronbach's alpha, and correlations. Then Mplus for McDonald's Omega and JASP software to perform Confirmatory factor analysis (CFA) with Structural Equation Modeling (SEM) and test the construct validity of the 20-item PSQ-OP and the 20-item PSQ-ORG Spanish adapted version. According to Richaud de Minzi (2008) SEM and CFA examine the causal relationships between the observed

variables and the latent constructs (factors). Also, the Average Variance Extracted (AVE) and the Composite Reliability (CR) examine the construct validity concerning the factor loadings and test internal convergent and discriminant validity. Finally, a bivariate Pearson and Spearmen correlation test the external convergent validity of the Puerto Rican 20-item PSQ-OP Spanish version with the Puerto Rican 20-item PSQ-Org Spanish version.

In addition, there are many thresholds based on the literature review to establish the fit indices; the Comparative Fit Index (CFI) ≥.90 is acceptable, but a CFI ≥ .95 is considered a good value. The Tucker-Lewis Index (TLI) ≥ .90 is a fair value, but a TLI ≥ .95 is good. The Incremental Index of Fit (IFI) ≥ .90, Goodness of Fit (GFI) ≥ .90, and the Normed Fit Index (NFI) ≥ .90 are acceptable, but the indices more than .95 are excellent, and Root Mean Square Error Approximation (RMSEA) ≤ 0.08 is acceptable, but an RMSEA ≤ 0.05 is considered excellent (Brown, 2015; Byrne,2016; Kline, 2016). Also, the Standardized Root Mean Squared Residual (SRMR) ≤ .08 is acceptable (Brown, 2015; Byrne,2016; Kline, 2016). However, Shi et al. (2019) argue that the SRMR fit index is more appropriate in smaller samples than the RMSEA fit index. However, Forero et al. (2009) argue that using Diagonally Weighted Least Squares (DWLS) is appropriate for fitting the ordinal factor analysis model and smaller sample size. Therefore, this study will use DWLS estimation to determine a better fit model.

Moreover, the AVE and the CR. examine further validity concerns factor loadings on each scale's construct (Fornell & Larcker, 1981). The Composite Reliability tests the internal consistency in the scale items, sometimes called the construct reliability. It is equal to the actual score variance relative to the total scale score variance (Brunner & Süb, 2005). The CR indicates the shared variance among the observed variables used to indicate a latent construct (Fornell & Larcker, 1981).

Results

First, it is important to examine the test normality of the skew and kurtosis' critical values of the Puerto Rican 20-item PSQ-OP and the 20-item PSQ- ORG Spanish adapted version. According to Hair et al. (2014), skew critical value should not exceed 3.0, and the kurtosis critical value should not exceed 10 for a normal distribution.

Next, the Shapiro-Wilk may test in samples below 300 for test normality of distributing the scores for two groups (Field, 2018; Shapiro & Wilk, 1965), in this case, males and females. According to the Shapiro-Wilk test's results and thresholds within -1.96 and +1.96 in the z-value and a visual inspection of their histograms, normal Q-Q plots and the box plots showed that the scores were not approximately normally distributed for males. In the 20-item PSQ-OP, males had a skewness of 0.332 (SE = 0.197) and kurtosis -0.458 (SE = 0.392) but was above the significant value of p < .001 and females a skewness of 0.262 (SE = 0.340) and kurtosis -0.193 (SE = 0.668). On the other hand, in the 20-item PSQ-ORG, males had a skewness of 0.345 (SE = 0.197) and kurtosis -0.834 (SE = 0.392) but was above the significant value of p < .001 and females a skewness of 0.452 (SE = 0.340)

Table 1

Descriptive Distribution of the Skew, Kurtosis, and Shapiro-Wilk of the 20-Item PSQ-OP Spanish Version

Item	Mean	SD	Skew	Kurtosis	Shapiro-Wilk
PSQ-Op 1	2.76	1.71	0.63	-0.42	.85
PSQ-Op 2	3.32	1.10	0.39	-0.94	.88
PSQ-Op 3	3.09	1.84	0.56	-0.54	.88
PSQ-Op 4	3.57	1.85	0.24	-0.72	.91
PSQ-Op 5	3.27	1.92	0.48	-0.80	.90
PSQ-Op 6	3.13	1.86	0.51	-0.69	.89
PSQ-Op 7	2.21	1.49	1.18	0.87	.79
PSQ-Op 8	3.32	1.87	0.42	-0.77	.91
PSQ-Op 9	2.77	1.71	0.81	0.01	.86
PSQ-Op 10	3.40	1.93	0.32	-1.02	.90
PSQ-Op 11	3.74	1.88	0.18	-0.91	.93
PSQ-Op 12	3.91	1.93	0.11	-0.97	.92
PSQ-Op 13	4.21	2.10	-0.09	-1.18	.89
PSQ-Op 14	2.94	1.86	0.61	-0.61	.86
PSQ-Op 15	2.32	1.75	1.31	0.84	.76
PSQ-Op 16	2.42	1.77	1.15	0.39	.79
PSQ-Op 17	2.72	1.76	0.78	-0.19	.86
PSQ-Op 18	2.49	1.68	0.56	-0.75	.82
PSQ-Op 19	3.12	1.96	0.56	-0.75	.88
PSQ-Op 20	2.97	1.80	0.68	-0.36	.88

Note: SD = Standard deviation

and kurtosis 0.158 (SE = 0.668). Table 1 and Table 2 illustrate the skew, kurtosis, and Shapiro-Wilk.

Afterward, a multivariate normality analysis was performed regarding skewness and kurtosis using Mardia's coefficients in the 20-item PSQ-OP and 20-item PSQ-Org Spanish version. According to the results, both questionnaires show violations of the normality assumption. In the 20-item PSQ-OP Spanish version the Mardia's coefficient in mSkewness is 100, $\chi^2 = 3345$; df = 1540, $p < .001$ and the mKurtosis coefficient is 558, z = 285; $p < .001$. In the PSQ-ORG the Mardia's coefficient mSkewness is 114; df =1330; $p < .001$ and mKurtosis coefficient is 558, z = 39.7, $p < .001$.

Table 2

Descriptive Distribution of the Skew, Kurtosis, and Shapiro-Wilk of the 20-Item PSQ-ORG Spanish Version

Item	Mean	SD	Skew	Kurtosis	Shapiro-Wilk
PSQ-ORG 1	2.77	1.74	0.77	-0.30	.87
PSQ-ORG 2	3.71	2.02	0.23	-1.04	.90
PSQ-ORG 3	2.76	1.77	0.80	-0.24	.86
PSQ-ORG 4	2.45	1.56	0.91	-0.20	.84
PSQ-ORG 5	3.17	2.02	0.56	-0.90	.87
PSQ-ORG 6	4.05	2.16	0.04	-1.30	.89
PSQ-ORG 7	3.76	2.04	0.18	-1.11	.91
PSQ-ORG 8	2.29	1.48	1.02	0.45	.82
PSQ-ORG 9	3.12	1.84	0.60	-0.49	.89
PSQ-ORG 10	2.65	1.91	0.98	-0.14	.81
PSQ-ORG 11	2.48	1.61	0.92	0.20	.83
PSQ-ORG 12	2.96	1.84	0.64	-0.51	.87
PSQ-ORG 13	4.14	2.08	-0.04	-1.23	.90
PSQ-ORG 14	3.50	2.01	0.03	-0.95	.89
PSQ-ORG 15	2.54	1.87	1.05	0.02	.80
PSQ-ORG 16	3.21	2.03	0.51	-0.88	.87
PSQ-ORG 17	2.90	1.91	0.75	-0.48	.86
PSQ-ORG 18	2.94	1.94	0.73	-0.49	.85
PSQ-ORG 19	3.03	1.94	0.66	-0.59	.86
PSQ-ORG 20	4.04	2.15	0.01	-1.26	.89

Note: SD = Standard deviation

Construct Validity

Subsequently, a confirmatory factor analysis with structural equation modeling was performed on the Puerto Rican 20-item PSQ-OP Spanish adapted version in Model 1 (M1). The results show $\chi 2$ (170) = 198.974, $p < .001$ and the indices CFI = .99; TLI = .99; GFI= .98; IFI = 99; NFI = .97; SRMR = .07; RMSEA = .03 with RMSEA 90% CI lower bound (.00) and RMSEA 90% CI upper bound (.05) thresholds. The fit indices of the 20-item PSQ-OP Spanish version comply with the recommended thresholds and show a good model fit (Kline, 2016). Also, the factor loadings fluctuated between 45 to 77, and Kline (2016) mentions that factor loadings less than .30 were removed from the data. All the items show a significant p-value. Table 3 shows the factor loadings and parameters estimates of Model 1.

Afterwards, a confirmatory factor analysis with structural equation modeling

Table 3

Factor Loadings and Estimates Model 1 of the 20-Item PSQ-OP Spanish Version

Factor	Items	Symbol	Est.	Std. Error	z-value	p	95% Confidence Interval Lower	Upper	Std. Est. (all)
Factor1	PSQOP1	$\lambda 11$	1.14	0.05	24.87	<.001	1.05	1.23	0.66
	PSQOP2	$\lambda 12$	1.23	0.05	23.34	<.001	1.13	1.33	0.62
	PSQOP3	$\lambda 13$	1.17	0.05	23.92	<.001	1.07	1.26	0.63
	PSQOP4	$\lambda 14$	1.19	0.05	24.42	<.001	1.10	1.29	0.65
	PSQOP5	$\lambda 15$	1.33	0.05	25.48	<.001	1.22	1.43	0.69
	PSQOP6	$\lambda 16$	1.10	0.05	21.67	<.001	1.00	1.20	0.59
	PSQOP7	$\lambda 17$	0.67	0.04	17.12	<.001	0.59	0.75	0.45
	PSQOP8	$\lambda 18$	1.25	0.05	25.11	<.001	1.15	1.34	0.67
	PSQOP9	$\lambda 19$	1.31	0.05	26.34	<.001	1.21	1.40	0.76
	PSQOP10	$\lambda 110$	1.27	0.05	24.28	<.001	1.17	1.38	0.64
	PSQOP11	$\lambda 111$	1.28	0.05	25.37	<.001	1.18	1.38	0.68
	PSQOP12	$\lambda 112$	1.49	0.05	29.46	<.001	1.39	1.59	0.77
	PSQOP13	$\lambda 113$	1.36	0.05	25.40	<.001	1.26	1.47	0.65
	PSQOP14	$\lambda 114$	1.22	0.05	24.33	<.001	1.12	1.32	0.66
	PSQOP15	$\lambda 115$	1.14	0.05	21.91	<.001	1.04	1.24	0.65
	PSQOP16	$\lambda 116$	1.03	0.05	21.11	<.001	0.93	1.12	0.58
	PSQOP17	$\lambda 117$	1.03	0.05	20.48	<.001	0.93	1.13	0.58
	PSQOP18	$\lambda 118$	1.13	0.05	23.31	<.001	1.04	1.23	0.67
	PSQOP19	$\lambda 119$	1.50	0.05	27.74	<.001	1.40	1.61	0.77
	PSQOP20	$\lambda 120$	1.24	0.05	24.37	<.001	1.14	1.34	0.69

Note: Est.= Estimate; Std. Est. = Standard Estimates; p = p-value significant <.001.

was performed on the Puerto Rican 20-item PSQ-ORG Spanish version in M1. The results show $\chi 2\,(170) = 113.410$, p < .001 and the indices CFI = 1.00; TLI = 1.00; GFI= .99; IFI = 1.00; NFI = .99; SRMR = .05; RMSEA = 0.00 with RMSEA 90% CI lower bound (.00) and RMSEA 90% CI upper bound (.00) thresholds. Table 4 shows the factor loadings and parameters estimates of Model 1.

Convergent Validity and Reliability

Further, in Model 1, the average variance extracted was performed in the Puerto Rican 20-item PSQ-OP Spanish adapted version and examined a convergent analysis to measure the construct validity. The results show that the AVE was 0.44 but less than 0.50; however, it states that if the AVE is 0.40 and the CR is over .60, still there is

Table 4

Factor Loadings and Estimates Model 1 of the 20-Item PSQ-ORG Spanish Version

Factor	Items	Symbol	Est.	Std. Error	z-value	p	95% Confidence Interval Lower	Upper	Std. Est. (all)
Factor 1	PSQ-Org1	$\lambda 11$	1.03	0.04	25.71	< .001	0.95	1.11	0.59
	PSQ-Org2	$\lambda 12$	1.47	0.05	30.70	< .001	1.37	1.56	0.73
	PSQ-Org3	$\lambda 13$	1.41	0.04	32.74	< .001	1.33	1.50	0.79
	PSQ-Org4	$\lambda 14$	1.06	0.04	27.88	< .001	0.99	1.14	0.68
	PSQ-Org5	$\lambda 15$	1.61	0.05	34.10	< .001	1.51	1.70	0.80
	PSQ-Org6	$\lambda 16$	1.59	0.05	33.56	< .001	1.50	1.68	0.74
	PSQ-Org7	$\lambda 17$	1.61	0.05	34.94	< .001	1.52	1.70	0.79
	PSQ-Org8	$\lambda 18$	0.86	0.04	24.34	< .001	0.79	0.93	0.58
	PSQ-Org9	$\lambda 19$	1.29	0.04	29.89	< .001	1.21	1.37	0.70
	PSQ-Org10	$\lambda 110$	1.40	0.05	29.46	< .001	1.31	1.49	0.73
	PSQ-Org11	$\lambda 111$	1.04	0.04	27.53	< .001	0.97	1.11	0.65
	PSQ-Org12	$\lambda 112$	1.37	0.04	30.87	< .001	1.28	1.45	0.74
	PSQ-Org13	$\lambda 113$	1.65	0.05	36.20	< .001	1.56	1.74	0.79
	PSQ-Org14	$\lambda 114$	1.62	0.05	34.50	< .001	1.53	1.71	0.81
	PSQ-Org15	$\lambda 115$	1.33	0.05	28.90	< .001	1.24	1.42	0.71
	PSQ-Org16	$\lambda 116$	1.63	0.05	33.78	< .001	1.54	1.73	0.80
	PSQ-Org17	$\lambda 117$	1.48	0.05	31.42	< .001	1.39	1.57	0.77
	PSQ-Org18	$\lambda 118$	1.38	0.05	29.98	< .001	1.29	1.47	0.71
	PSQ-Org19	$\lambda 119$	1.45	0.05	30.60	< .001	1.35	1.54	0.74
	PSQ-Org20	$\lambda 120$	1.67	0.05	35.32	< .001	1.58	1.76	0.78

Note: Est.= Estimate; Std. Est. = Standard Estimates; p = p-value significant <.001.

construct validity (Fornell & Lacker; 1981). The composite reliability was tested to test the internal consistency and shows it was .94 and according to Hair et al. (2014); Malhotra and Dash (2011) meaning that it has excellent reliability, and the AVE and CR may indicate the Puerto Rican 20-item PSQ-OP Spanish version measures the construct of operational stress well.

Also, in Model 1, the average variance extracted was performed in the Puerto Rican 20-item PSQ-ORG Spanish adapted version, and the results show that the AVE was 0.55. The composite reliability was .96 measures the construct of organizational stress well. Furthermore, the next step is to

test the convergent analysis of the Puerto Rican 20-item PSQ-Op Spanish adapted version. A Pearson and Spearman correlation is to examine external convergent validity. The results show there is a strong correlation between the Puerto Rican 20-item PSQ-OP Spanish adapted version with the 20-item PSQ-Org Spanish adapted version, Pearson (r = .83, p < .001; Lower 95% CI = .78; Upper 95% CI = .87) and Spearman (rho = .84, p < .001; Lower 95% CI = .79; Upper 95% CI = .88).

Finally, a Cronbach's alpha and the McDonald's Omega test the reliability of the entire two questionnaires. First, the total reliability of the Puerto Rican 20-item PSQ-OP Spanish version's Cronbach's alpha is .94 (Mean = 3.09; Standard deviation = 0.53) with a 95% Confidence Interval Lower bound of .93 and 95% Confidence Interval Upper bound of .95 and McDonald's Omega .94 with a 95% Confidence Interval Lower bound of .93 and 95% Confidence Interval Upper bound of .95.

On the other hand, the total reliability of the Puerto Rican 20-item PSQ-ORG Spanish adapted version's Cronbach's alpha is .96 (Mean = 3.12; Standard deviation = 0.57) with a 95% Confidence Interval Lower bound of .95 and 95% Confidence Interval Upper bound of .97 and McDonald's Omega .96 with a 95% Confidence Interval Lower bound of .95 and 95% Confidence Interval Upper bound of .97.

Discrimination Index and Internal Consistency of Scale Items

Lastly, an analysis of the Puerto Rican 20-item PSQ-OP Spanish adapted version in Model 1 and the items' discrimination index, also known as the corrected item-total correlations, comply with the recommended thresholds of .30 (Kline, 2016). The item's discrimination index fluctuated between 44 and 74. The internal consistency tests each item using Cronbach's alpha coefficient and the McDonald's Omega. All the coefficients were adequate. Table 5 and Table 6 show the discrimination index in the final 20-item Puerto Rican PSQ-OP and PSQ-ORG Spanish adapted version.

Discussion

This study aimed to apply confirmatory factor analysis and structural equation modeling on the Puerto Rican 20-item PSQ-OP and the 20-item PSQ-ORG Spanish adapted version in a sample of municipal police officers in Puerto Rico. Also, this study shows that the 20-item PSQ-OP and the 20-item PSQ-ORG Spanish adapted version have adequate psychometric properties, a good model fit, construct validity, and have a one-factor structure.

In the theoretical implications, this study shows similar results in Irniza et al.'s (2014) study of the Malaysian 20-item PSQ-OP and a one-factor structure. In addition, this study shows that the 20-item Puerto Rican PSQ-OP Spanish version in a Confirmatory Factor Analysis with Structural Equation Modeling provided satisfactory results. All 20 items have a one-factor structure and excellent internal reliability above .90 as in the 20-item PSQ-OP English version and Irniza et al.'s study. Furthermore, the convergent analysis of the Puerto Rican 20-item PSQ-OP Spanish version with the 20-item PSQ-Org Spanish version also correlates .80 as in Irniza et al.'s

Table 5

Discrimination Index of the 20-Item PSQ-OP Spanish Adapted Version

Items	Mean	SD	r_{bis}	If item dropped	
				McDonald's ω	Cronbach's α
PSQ-OP1	2.77	1.71	.64	.94	.94
PSQ-OP2	3.32	2.00	.59	.94	.94
PSQ-OP3	3.10	1.84	.61	.94	.94
PSQ-OP4	3.58	1.85	.62	.94	.94
PSQ-OP5	3.27	1.92	.67	.94	.93
PSQ-OP6	3.13	1.86	.57	.94	.94
PSQ-OP7	2.21	1.49	.44	.94	.94
PSQ-OP8	3.32	1.87	.64	.94	.93
PSQ-OP9	2.77	1.71	.74	.93	.93
PSQ-OP10	3.40	1.98	.61	.94	.94
PSQ-OP11	3.74	1.88	.65	.94	.93
PSQ-OP12	3.91	1.93	.74	.93	.93
PSQ-OP13	4.21	2.10	.62	.94	.94
PSQ-OP14	2.94	1.86	.63	.94	.94
PSQ-OP15	2.32	1.75	.65	.94	.93
PSQ-OP16	2.42	1.77	.59	.94	.94
PSQ-OP17	2.79	1.78	.58	.94	.94
PSQ-OP18	2.49	1.68	.67	.94	.93
PSQ-OP19	3.12	1.95	.74	.93	.93
PSQ-OP20	2.97	1.80	.67	.94	.93

Note: Standard Deviation; $r_{bis =}$ corrected item-total correlations

study.

On the other hand, in previous research by McCreary and Thompson (2006), the 20-item PSQ-ORG supports a one-factor structure with 20 items and possesses a Cronbach's alpha over (.90). In other words, the 20-item Puerto Rican PSQ-ORG Spanish version and this study provide and sustains the same construct validity as in the questionnaire developed by McCreary and Thompson. Finally, the overall results of the revised model replicate the one-dimensional structure in the theoretical construction of the instrument. Furthermore, this study shows that the 20-item Puerto Rican PSQ-ORG has adequate Cronbach's alpha, Omega, and composite reliability over .90, similar in other studies, such as Acquadro Maran et al. (2018) with the Italian version 20-item PSQ-ORG and a study by Louw and Vivers (2010) in South Africa. However, in Mahmudul et al. (2014) study, the Bangladesh version contains one dimension structure but 14 items after Exploratory Factor Analysis and the 14-item Bangladesh PSQ-ORG and possess a Cronbach's alpha of .80.

Table 6

Discrimination Index of the 20-Item PSQ-ORG Adapted Spanish Version

| Items | Mean | SD | r_{bis} | If item dropped | |
				McDonald's ω	Cronbach's α
PSQ-ORG1	2.77	1.88	.61	.96	.96
PSQ-ORG2	3.72	2.09	.70	.96	.96
PSQ-ORG3	2.81	1.87	.80	.96	.96
PSQ-ORG4	2.42	1.62	.67	.96	.96
PSQ-ORG5	3.17	2.09	.78	.96	.96
PSQ-ORG6	4.08	2.23	.74	.96	.96
PSQ-ORG7	3.82	2.12	.77	.96	.96
PSQ-ORG8	2.23	1.49	.60	.96	.96
PSQ-ORG9	3.13	1.92	.68	.96	.96
PSQ-ORG10	2.67	1.98	.73	.96	.96
PSQ-ORG11	2.45	1.67	.65	.96	.96
PSQ-ORG12	2.96	1.92	.75	.96	.96
PSQ-ORG13	4.17	2.14	.77	.96	.96
PSQ-ORG14	3.52	2.10	.79	.96	.96
PSQ-ORG15	2.56	1.92	.71	.96	.96
PSQ-ORG16	3.20	2.09	.79	.96	.96
PSQ-ORG17	2.91	1.98	.76	.96	.96
PSQ-ORG18	2.92	2.00	.69	.96	.96
PSQ-ORG19	3.08	2.00	.73	.96	.96
PSQ-ORG20	3.99	2.22	.77	.96	.96

Note: Standard Deviation; r_{bis} = corrected item-total correlations

On the other hand, in the practical implications, the Puerto Rican 20-item PSQ-OP Spanish version and the Puerto Rican 20-item PSQ-ORG Spanish version may be used in the Puerto Rico police force to determine police officers' experience of operational stress. In academia, the instrument may help better understand the phenomenon of stress in police officers and other job-related stress and how it may impact employee strain and organizational losses in the Puerto Rican police force work culture. In addition, future industrial-organizational psychologists, external consultants, and human resources specialists may use the Puerto Rican 20-item PSQ-OP and the Puerto Rican 20-item PSQ-ORG Spanish version to perform a survey and early screening and detection. It may help them identify a few aspects and concerns from the police officers, and the two instruments may be a valuable tool in diagnostic for organizational behavioral studies. Also, the two questionnaires are user-friendly and easy to read in Spanish, which may be simple to administer to the police population and use for need analysis

assessment research.

On the other hand, organizational stressors can lead police officers to experience a great deal of stress due to the oppressive actions against them. Police officers may have to deal with a heavy workload, interpersonal conflict with colleagues and supervisors, inadequate resources, bad timing, and an overly bureaucratic organizational system (Purba & Demou, 2019). Also, Hickman et al. (2011) believe several possible implications for criminal justice policy and practice. First, it should employ a methodological approach, such as cultivating awareness and comprehension of police officers exposed to stressful situations. Second, employ effective organizational changes and deployment strategies, improve job satisfaction, better police training, and conduct future studies.

Limitations of This Study

First, the sample size was small, and the results may not be generalized. Confirmatory factor analysis with structural equation modeling requires a larger sample to provide more substantial empirical results and validate an instrument. Also, most of the participants were male police officers from the municipal sector in a southern region in Puerto Rico, and there were no differences in sex and sector. There were no other municipalities in Puerto Rico as part of the data collection in this study. Therefore, it was a constraint to establish statistical differences among the sociodemographic variables. Lastly, this study used only a non-probabilistic convenience recruitment method, therefore, our sample is not representative of the Puerto Rican police population. It also did not evaluate the

reliability of the two questionnaires by, for example, the test-retest nor prior hypothesis tested.

Another limitation was that there were no other questionnaires to measure other variables such as burnout, motivation, commitment, and leadership to determine other possible factors contributing to stress in the police force. Another limitation in this study was that there were no other instruments to perform an external discriminant analysis. Finally, due to the type of work the police officers perform, they may not sincerely answer the questionnaires with honesty or dedicated time and concentration while answering them as, in some cases, if police officers report they experience severe stress, then they may face discrimination and even their superiors may ask the administration to disarm their firearms and refer them to psychological evaluation.

Recommendations

In future research, the Puerto Rican 20-item PSQ-OP and the Puerto Rican 20-item PSQ-ORG Spanish version may be applied in larger-sized samples with the local Puerto Rican government police force to determine which sectors experience operational and organizational stress. Moreover, the 20-item PSQ-OP and the 20-item PSQ-ORG Spanish version should be compared with other validated scales and variables to establish other factors associated with stress in the police, such as job motivation, commitment, psychological strain, burnout, suicidal ideation, and engagement. Furthermore, future research should perform a re-test and a criterion-referenced test with the 20-item PSQ-OP and 20-item PSQ-ORG Spanish version and examine the latent construct.

In addition, it may examine other work areas of the police force that experiences lots of stress, such as undercover agents, police transit unit, narcotic force division, and even isolated police officers in different types of communities in Puerto Rico. A final recommendation is that the Puerto Rican 20-item PSQ-OP and the 20-item PSQ-ORG questionnaire Spanish version may be applied in other Latin-speaking countries and compare cultural differences and a sociolinguistic language barrier.

Conclusion

The Spanish version of the Puerto Rican 20-item PSQ-OP and the 20-item PSQ-ORG seems reliable instruments with adequate psychometric properties and acceptable thresholds. Thus, the instrument shows promising results and is suited for the Puerto Rican police force. On the other hand, the 20-item PSQ-OP and the 20-item PSQ-ORG English version have proven to examine stress in the police force and a police survey throughout the years. Moreover, the 20-item PSQ-OP and the 20-item PSQ-ORG English version have been translated into different languages and proven useful but never have gone through a satisfactory confirmatory factor analysis; this study shows promising results that the 20-item PSQ-OP and the 20-item PSQ-ORG in the Puerto Rican police sample. Conversely, it is essential to evaluate and detect early interventions to provide police officers with better emotional and psychological well-being, better field training, improved job performance, and amended organizational policies.

In sum, the Puerto Rican 20-item PSQ-OP and the 20-item PSQ-ORG Spanish version contribute value to the Puerto Rican police department and government, especially in academia. New studies can profoundly understand how police officers feel about their jobs and measure their attitudes towards the police academy, supervisors, and peers. A well-translated instrument that has gone through translation by subject matter experts also plays a vital role in validating new instruments for future studies.

Conflict of Interests

Acknowledgements

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Appendix A

Operational Police Stress Questionnaire by McCreary and Thompson (2013) English version
Versión español Cuestionario de Estrés Operacional de la Policía por Delgado-Ramos; Vélez-Alvarado; Vélez-Vega (2019)

	No Stress at all/ Sin estrés en absoluto 1	2	3	Moderate Stress/ Estrés Moderado 4	5	6	A lot of Stress/ Mucho estrés 7
1. Shift Work Turnos de trabajo							
2.Working alone at night Trabajar solo en la noche							
3.Over-time demands Exigencias de tiempo extra							
4.Risk of being injured on the job. Riesgo de lesionarse en el trabajo							
5.Work-related activities on days off (e.g., court, community events) Actividades relacionadas con el trabajo en días libres (ej. Eventos jurídicos, comunitarios)							
6.Traumactic events (e.g. MVA, domestics, injury) Eventos traumáticos (ej. violencia doméstica, muerte, lesiones)							
7.Managing your social life out of work. Manejo efectivo de su vida social fuera del trabajo							

	No Stress at all/ Sin estrés en absoluto			Moderate Stress/ Estrés Moderado			A lot of Stress/ Mucho estrés
	1	2	3	4	5	6	7
8.Not enough time available to spend with friends and family No hay suficiente tiempo disponible para pasar con amigos y familiares							
9.Paperwork Papeleo							
10.Eating healthy at work. Comer saludable en el trabajo							
11. Finding time to stay in good psychical condition. Encontrar tiempo para mantenerse en buena condición física							
12.Fatigue (e.g., shift work, over-time). Agotamiento (turnos de trabajo, sobrecarga de trabajo)							
13.Occupation-related health issues (e.g., back pain) Problemas de la salud relacionados con la ocupación (ej. dolor de espalda)							
14. Lack of understanding from family and friends about your work. Falta de comprensión de su trabajo por parte de familiares y amigos							

	No Stress at all/ Sin estrés en absoluto			Moderate Stress/ Estrés Moderado			A lot of Stress/ Mucho estrés
	1	2	3	4	5	6	7
15. Making friends outside the job. Hacer amigos fuera del trabajo							
16. Upholding a "higher image" in public. Mantener una "buena imagen" ante la opinión pública							
17. Negative comments from the public Exposición a comentarios negativos del publico							
18.Limitations to your social life (e.g., who your friends are, where you socialize) Limitaciones en su vida social (ej. quienes son sus amigos, donde socializas)							
19.Feeling like you are always on the job. Siente que siempre está en el trabajo							
20. Friends/family feel the effects of the stigma associated with your job. Los amigos/familiares sienten los efectos del estigma asociado con su trabajo							

Appendix B

Organizational Police Stress Questionnaire by McCreary and Thompson (2013) English version

Version español Cuestionario de Estrés Organizacional de la Policía por Delgado-Ramos; Vélez-Alvarado; Vélez-Vega (2019)

	No Stress at all/ Sin estrés en absoluto 1	2	3	Moderate Stress/ Estrés Moderado 4	5	6	A lot of Stress/ Mucho estrés 7
1. Dealing with co-workers/ Lidiar con los compañeros de trabajo							
2. The feeling that different rules apply to different people (e.g., favoritism)/ La sensación de que las diferentes reglamentaciones se aplican de manera diferente a otras personas (ej. favoritismo)							
3. Feeling like you always have to prove yourself to the organization/ Siente que siempre debe demostrar si valía antes la organización							
4. Excessive administrative duties/ Excesivos deberes administrativos							
5. Constant changes in policy/ legislation/ Cambios constantes en la policía / legislación							
6. Staff shortages/ Escasez de personal							

	No Stress at all/ Sin estrés en absoluto 1	2	3	Moderate Stress/ Estrés Moderado 4	5	6	A lot of Stress/ Mucho estrés 7
7. Bureaucratic red tape/ Burocracia excesiva (administración ineficiente por el papeleo y las formalidades, y la influencia excesiva de los funcionarios en los asuntos públicos							
8. Too much computer work/ Demasiado trabajo de índole tecnológico							
9. Lack of training on new equipment/ Falta de entrenamiento de los nuevos equipos							
10. Perceived pressure to volunteer free time/ Presión percibida para trabajar en el tiempo libre de manera voluntaria							
11. Dealing with supervisors/ Trato con los supervisores							
12. Inconsistent leadership style/ Estilos de liderazgos inconsistentes							
13. Lack of resources/ Falta de recursos							
14. Unequal sharing of work responsibilities/ Desigualdad en la asignación de las responsabilidades laborales							

	No Stress at all/ Sin estrés en absoluto 1	2	3	Moderate Stress/ Estrés Moderado 4	5	6	A lot of Stress/ Mucho estrés 7
15. If you are sick or injured, your co-workers seem to look down on you/ Si está enfermo o lesionado, sus compañeros de trabajo parecen menospreciarlo							
16. Leaders over-emphasize the negatives (e.g., supervisor evaluations, public complaints)/ Los líderes enfatizan demasiado los aspectos negativos (ej. evaluaciones de supervisores, quejas públicas							
17. Internal investigations/ Investigaciones internas							
18. Dealing the court system/ Lidiar con el sistema judicial							
19. The need to be accountable for doing your job/ La necesidad de rendir cuentas por hacer su trabajo							
20. Inadequate equipment/ Equipo inadecuado							